

Grizzly *Industrial, Inc.*®

CLASSICAL GUITAR KIT MODEL H3122 INSTRUCTION MANUAL



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WARNING

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

- Lead from lead-based paints.
- Crystalline silica from bricks, cement, and other masonry products.
- Arsenic and chromium from chemically treated lumber.

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

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SECTION 1: SAFETY

WARNING

Always wear safety glasses or goggles when operating equipment. Everyday glasses or reading glasses are not safety glasses. Be certain the safety glasses you wear meet the appropriate standards of the American National Standards Institute (ANSI).

Because there are various ways to cut and join wood, you can make substitutions for the methods stated in this plan. We try to suggest the easiest methods possible. However, only you know your skills with each piece of machinery. Never compromise your safety by using a cutting method with which you are not comfortable. Instead, find an alternative approach that will yield the same result.

WARNING

These instructions assume that you are intimately familiar with the safe operation and use of woodworking machinery and woodworking tools, and understand the techniques used to reproduce this project. If you do not qualify for both of these criteria, **STOP building this project for your own safety.** Read and understand the owner's manual for the machinery you intend to use, take a woodworking class or visit your local library for more information. Woodworking machinery and tools are inherently dangerous, because they use sharp edges that can and will cause serious personal injury including amputation and death. Do not underestimate the ability of these tools and machinery to cause injury. Never operate any tool without all guards in place and always wear approved safety glasses. For your own safety, please heed this warning.

SECTION 2: INTRODUCTION

We are proud to offer the Model H3122 Classical Guitar Kit. This kit is part of a growing Grizzly family of fine woodworking products. When assembled according to the guidelines set forth in this manual, you can expect years of enjoyment from this guitar.

We are pleased to provide this manual with the Model H3122. It was written to guide you through assembly, review safety considerations, and cover general information. It represents our effort to produce the best documentation possible.

If you have any comments regarding this manual, please write to us at the address below:

Grizzly Industrial, Inc.
c/o Technical Documentation
P.O. Box 2069
Bellingham, WA 98227-2069

Most importantly, we stand behind our products. If you have any questions or parts requests, please call or write us at the location listed below.

Grizzly Industrial, Inc.
1203 Lycoming Mall Circle
Muncy, PA 17756
Phone: (570) 546-9663
Fax: (800) 438-5901
E-Mail: techsupport@grizzly.com
Web Site: <http://www.grizzly.com>

The specifications, drawings, and photographs illustrated in this manual represent the Model H3122 as supplied when the manual was prepared. However, owing to Grizzly's policy of continuous improvement, changes may be made at any time with no obligation on the part of Grizzly. For your convenience, we always keep current Grizzly manuals available on our website at www.grizzly.com. Any updates to products will be reflected in these manuals as soon as they are complete. Visit our site often to check for the latest updates to this manual!



SECTION 3: PARTS INVENTORY

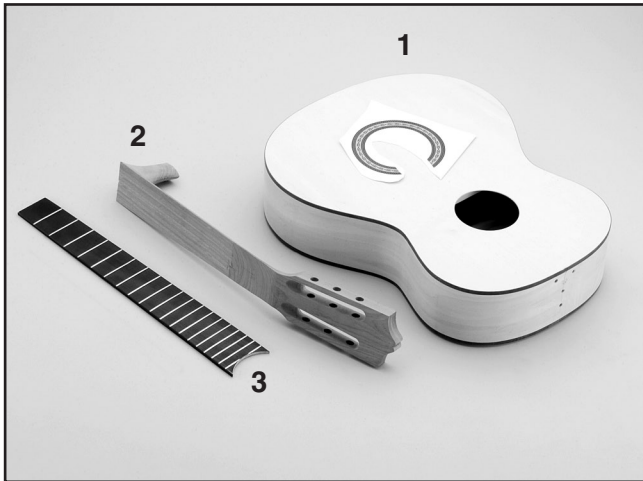


Figure 1. Components.

REF	PART #	DESCRIPTION
1	PH3122001	Guitar Body
2	PH3122002	Guitar Neck
3	PH3122003	Fingerboard

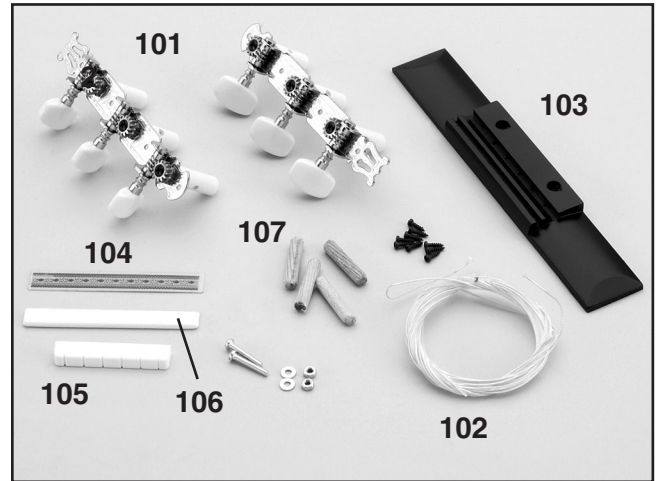


Figure 2. Hardware.

REF	PART #	DESCRIPTION
101	PH3122101	Machine Heads W/Fasteners
102	PH3122102	String Set
103	PH3122103	Bridge W/Fasteners
104	PH3122104	Bridge Decoration Sticker
105	PH3122105	String Nut
106	PH3122106	Saddle
107	PH3122107	Dowels

SECTION 4: SANDING

Supplies/Tools

The majority of the wooden components in this kit are fully machined from the factory and are ready for assembly. A small amount of drilling, sanding and light machining will need to be performed to complete the guitar.

Recommended Tools & Supplies:

- Phillips Screwdriver
- Needle-Nose Pliers
- Electric Drill
- Drill Bit Set
- #180, #240, and #320 Aluminum-Oxide Sanding Paper
- Sanding Block
- Masking Tape
- Painting/Finishing Supplies
- Coat Hanger
- C-Clamp
- Tack Cloth
- Coping, Jig, or Scroll Saw (Optional)



Guitar Body

The guitar body has been assembled and rough sanded at the factory; however, no finish has been applied.

To sand the guitar body:

1. **Wear an ANSI-approved respirator and safety glasses when sanding wood!**
2. Using either an electric palm sander or a sanding block, sand the guitar body (EXCEPT the guitar neck notch, the edges, and the sound hole) with #180 grit aluminum-oxide sanding paper until there is a consistent scratch pattern on the entire surface. Note—*When hand sanding, always sand in the same direction as the wood grain.*
3. Sand the guitar body with a #240 grit sanding paper until there is a consistent scratch pattern on the entire surface.
4. Sand the guitar body with a #320 grit sanding paper until there is a consistent scratch pattern on the entire surface.
5. Wipe the guitar body with a damp cloth. Wiping the workpiece with a damp cloth before the final sanding helps to “raise” the wood grain; thus, allowing the “raised” grain to be sanded smooth.
6. Once the guitar body is dry, repeat **step 4**.
7. Wipe the guitar body with a tack cloth to remove all remaining sanding dust.



Neck

Like the guitar body, most of the guitar neck has been machined at the factory; however, the neck headstock can be customized to reflect personal taste. Additional cutting, inlay, or design work can give an otherwise ordinary guitar that custom look that sets it apart from others! Note—*Take your time with this sub-section and consider testing ideas in scrap wood before performing the work on the actual headstock.*

To sand the guitar neck:

1. **Wear an ANSI-approved respirator and safety glasses when sanding wood!**
2. Perform any custom cutting, inlay, or design work to the neck headstock.
3. Using the sanding technique described in the previous sub-section, sand the entire guitar neck, EXCEPT for the fingerboard mounting surface. Note—*Sanding the fingerboard mounting surface will affect the playability of the guitar and could lead to unrepairable damage.*



Fingerboard

The fingerboard requires no sanding. Note—*Sanding the fingerboard will affect the playability of the guitar and could lead to unrepairable damage.*



Bridge

The bridge is rough sanded at the factory. Final sand the bridge as described in the **Guitar Body** sub-section.



SECTION 5: ASSEMBLY

Neck to Body

Attaching the neck to the guitar body is the most crucial part of assembling the guitar. Failure to attach the neck correctly could result in difficult bridge and string adjustments, or even worse, it could lead to unreparable damage.

To attach the neck to the body:

1. Place the four wooden dowels into the body. Note—*DO NOT use glue at this time!*
2. Slide the neck onto the dowels.
3. Using a straightedge, make note of any portion of the neck protruding above the surface of the body (**Figure 3**).

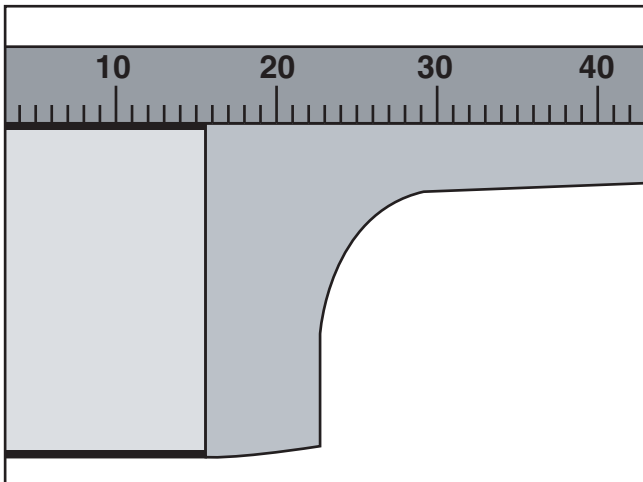


Figure 3. Checking flatness.

4. Using sandpaper or a file, flatten the neck until it is flush with the surface of the body.
5. Before the neck can be glued to the body, the following must be verified:
 - a. The neck surface and the body surface must be perfectly flat. Note—*Use a straightedge to verify this critical point. Once the neck is glued to the body, little can be done to correct mistakes.*
6. Disassemble the neck and body, and reassemble with wood glue. Note—*DO NOT wipe glue squeeze-out at this time! Once the squeeze-out is dried, remove it with a sharp chisel.*
7. Once the desired neck position is achieved, use large rubber bands or a band clamp to hold the assembly during drying (**Figure 4**).



Figure 4. Clamped neck/body assembly.



Fingerboard to Neck

To attach the fingerboard to the neck:

1. Using a straightedge, make sure the neck and body surface are flush.
2. Using rubber bands and small sticks of wood, secure the fingerboard to the neck with a thin, even layer of wood glue (**Figure 5**). Note—*Make sure the fingerboard is centered across the width of the neck and that the 12th fret is centered over the neck to body joint.*

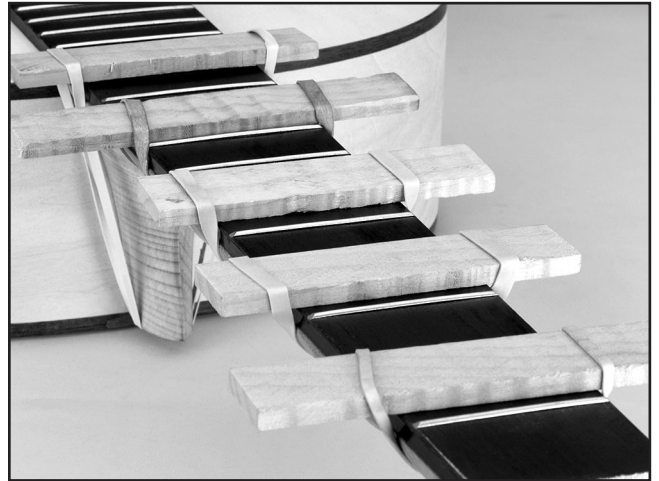


Figure 5. Securing the fingerboard to the neck.

3. After the fingerboard has thoroughly dried, use a file or sandpaper to make the edge of the neck flush with the edge of the fingerboard.



Bridge/Nut Locations

The correct distances between the inside edge of the nut, the center of the 12th fret and the center of the bridge saddle slot are crucial to the performance of this guitar. **Figure 7** shows the correct distances.

To determine the correct bridge/nut locations:

1. Position the center of the bridge saddle slot exactly 325mm away from the center of the 12th fret (**Figure 6**).

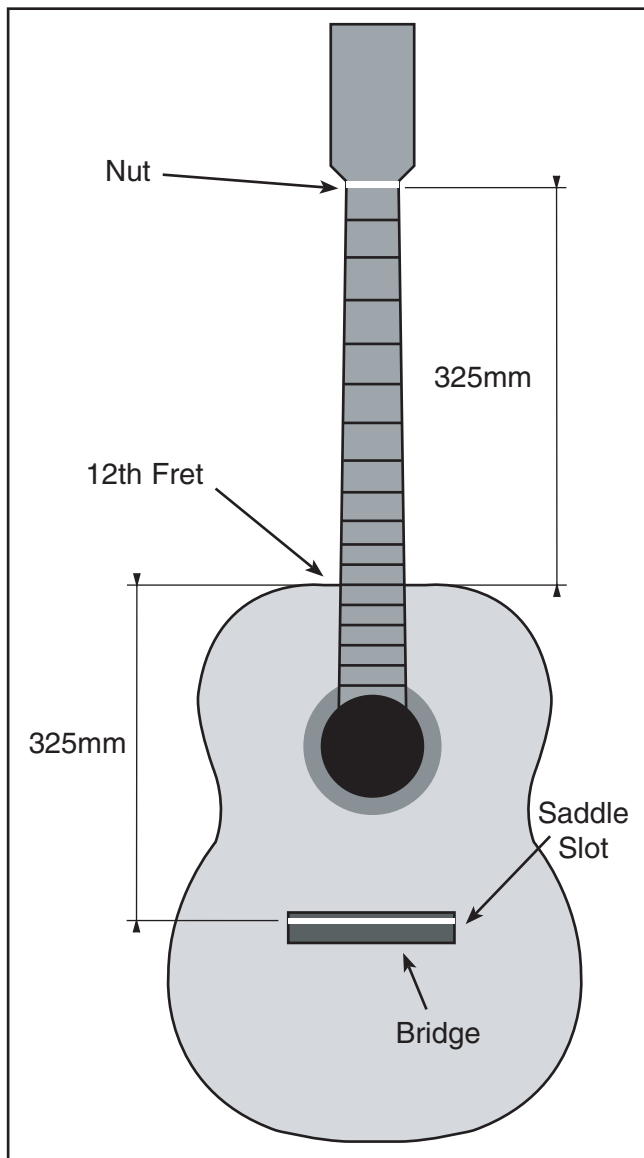


Figure 6. Saddle slot positioned correctly in relation to the 12th fret.

2. Using a pencil, lightly mark the guitar body where the front edge of the bridge is located.
3. When placed against the end of the fingerboard, the edge of the nut should be exactly 325mm from the center of the 12th fret (**Figure 6**).
4. Attach pieces of sewing thread to the 1st and the 6th nut string slots and tape the opposite ends over the corresponding string slots on the bridge.
5. Adjust the bridge so there is an equal amount of space between the fingerboard edges and the threads (**Figure 7**).

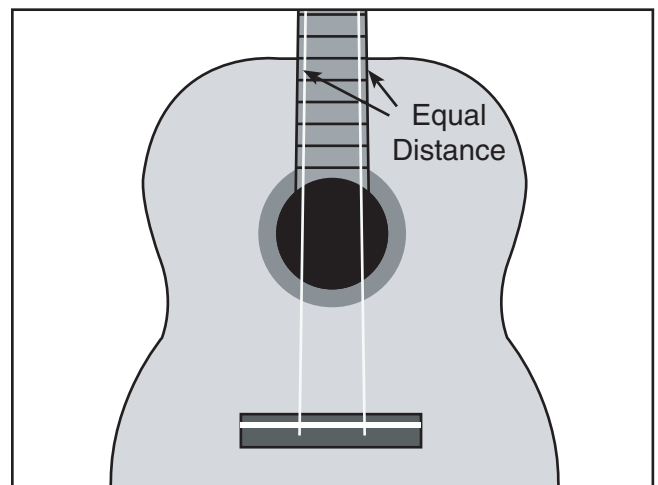


Figure 7. Positioning the bridge across the width of the guitar.

6. Using a pencil, lightly mark the guitar body where the side edges of the bridge are located. Note—*DO NOT glue the bridge to the body at this time.*



Covered Areas

In preparation for the finish coating, protect the following parts of the guitar (Figures 8 & 9):

- Bridge Mounting Location
- Fingerboard
- Sound Hole (Hole Filled With Newspaper)



Figure 8. Masked bridge area and blocked sound hole.

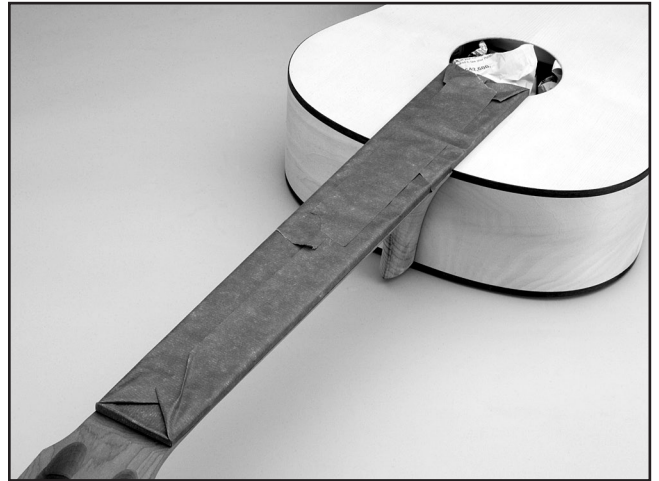


Figure 9. Masked fingerboard.

Use a small stick of wood to carefully press all the masking tape edges securely to the guitar pieces. The finish coat can seep under these edges, especially near corners, uneven edges, and where the frets meet the fingerboard. Note—*Failure to correctly mask off these areas could result in unrepairable damage to the guitar.*



Painting/Finishing

Finishing supplies are not supplied with the guitar kit. Note—*The guitar body is made from spruce wood and the neck from poplar wood. Clear finishes such as lacquer look exceptionally stunning and glossy on these surfaces.*

Painting/Finishing Tips:

- **Always work in a well ventilated area when using finishing materials.**
- **Wear an ANSI-approved respirator mask and safety glasses when using finishing materials!**
- Fabricate hooks from shirt hangers to suspend the guitar components during the finishing process.
- Several thinner coats usually produce a nicer finish than one heavy coat. Note—*Always follow the finish manufacturer's instructions.*

- Dust particles suspended in the air will settle on wet finishes, resulting in less than satisfactory results. To avoid this problem:
 1. Leave the finishing room undisturbed for 24 hours prior to applying the finish.
 2. Have the guitar components positioned for the finish application upon entering the finish room.
 3. Avoid making unnecessary movements upon entering the finish room.
 4. Apply the finish and immediately leave the finish room.
 5. DO NOT return to the finish room until the specified drying time has elapsed.



Sound Hole Decal

To attach the sound hole decal:

1. Submerge the decal sheet in water until the clear decal slides around on the paper backing easily with finger pressure. This usually only takes a few minutes.
2. Remove the decal sheet from the water, letting the excess water run off.
3. Lay the decal sheet over the sound hole.
4. Lightly press down on the decal with dampened fingers and slowly slide the decal sheet from underneath the decal with the other hand.
5. When the decal sheet is completely removed, lightly press on the decal with a dry cloth to remove the excess water trapped underneath.



Attaching Bridge

To attach the bridge to the body:

1. Remove the masking tape from the bridge location.
2. Apply a thin, even layer of wood glue to the back of the bridge.
3. Position the bridge on the bridge location penciled on the body.
4. Make sure the bridge is correctly positioned and let it dry for at least 6 hours.
5. Using a 1/8" drill bit, drill out the two mounting holes in the bridge.
6. Secure the bridge to the body with the supplied screws, washers, and nuts.
7. The heads of the screws can be covered with the bridge decoration sticker.



Machine Heads

The machine heads mount so the buttons are on the back side of the headstock.

To install the machine heads:

1. Slide the machine heads through the peg holes on the side of the headstock. Note—*Make sure the lyre end of the machine head is positioned as shown in **Figure 10**.*

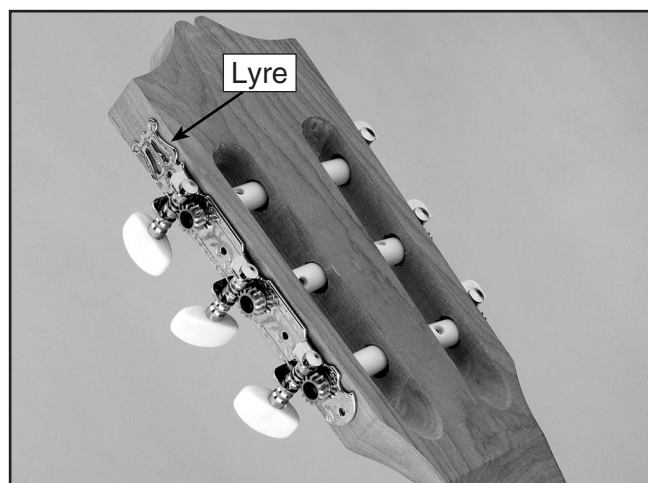


Figure 10. Correct tuning machine position.

4. Using a $\frac{1}{16}$ " drill bit, drill $\frac{5}{16}$ " deep holes straight through the screw holes in the machine heads.
5. Secure the machine heads to the guitar headstock with the included eight $\frac{5}{16}$ " wood screws.



Installing Strings

The correct position of the guitar strings are shown in **Figure 11**. The thin High E string is called the "1st" string and the thick Low E string is called the "6th" string.

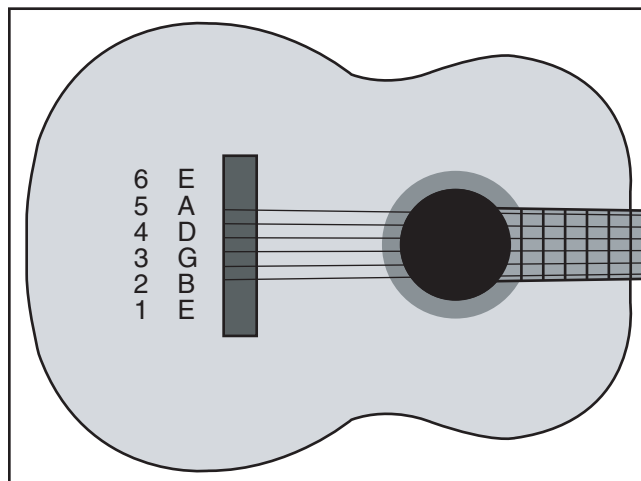


Figure 11. Correct guitar string position.

To install the guitar strings:

1. Slide the string ends through the holes in the bridge.
2. Tie the strings as shown in **Figure 12**.

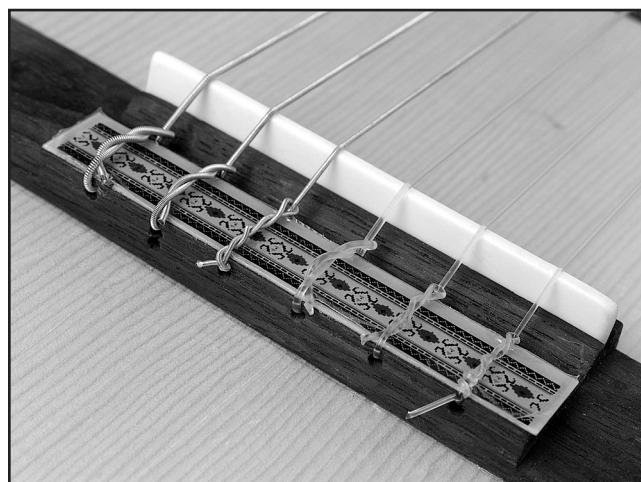


Figure 12. Correct string knots.

(Continued)

3. Place the saddle in the bridge saddle slot and place the nut at the upper end of the fingerboard. Note—*DO NOT glue the nut or the saddle at this time.*
4. Route the string to the inside of the corresponding tuning peg and through the peg hole. Note—*Allow enough string slack to allow 2-3 complete winds around the tuning peg.*
5. Turn the tuning button counter-clockwise to tighten the string. Note—*DO NOT over-tighten the string. Final string tuning will be discussed later in the manual.*
6. Use wire cutters to cut off the excess string.
7. Repeat the above process for the remaining strings.



String Height

Correct string height is crucial for maximizing the playability of your new guitar. The string height is defined as the distance between the top face of the fret and the bottom face of the string (**Figure 13**).

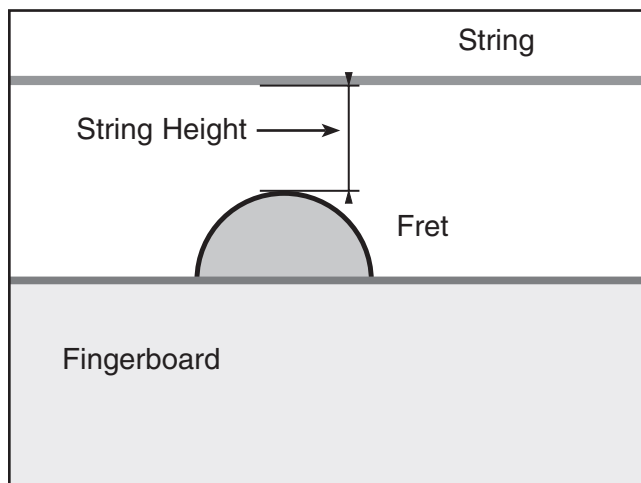


Figure 13. String height measurement (side view).

Measurements are taken at the following locations. Note—*Use a steel ruler with a resolution of at least $\frac{1}{64}$ ".*

- **1st fret:** 1st string & 6th string
- **12th fret:** 1st string & 6th string

(Continued)

To check the string heights of the 1st and 6th strings at the 1st fret:

Measure the string heights at the 1st fret (**Figure 14**).

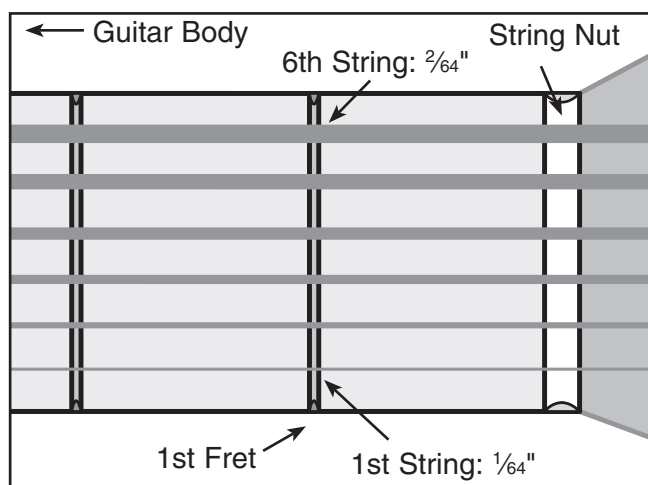


Figure 14. Correct 1st fret string heights.

- If the string heights are correct (**Figure 33**), then move to checking the string heights at the 12th fret.
- If the string heights are incorrect at the 1st fret, this is an indication that the groove the string nut sits in needs to be either deepened or made shallower. This condition is most likely a result of wood movement due to humidity changes in the environment. We recommend having a qualified guitar technician raise or lower the nut before continuing with string height adjustment at the 12th fret.

To check the string heights of the 1st and 6th strings at the 12th fret:

Measure the string heights at the 12th fret (**Figure 15**).

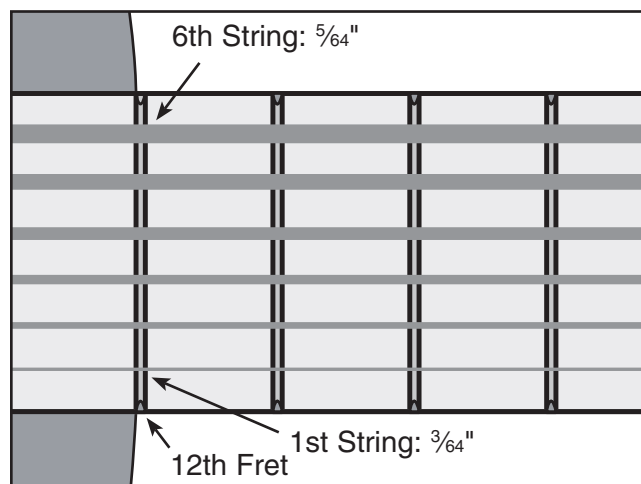


Figure 15. Correct 12th fret string heights.

- If the string heights are correct, then continue to the next sub-section.
- If the string heights are incorrect at the 12th fret, this is an indication that the groove the saddle sits in needs to be either deepened or made shallower. This condition is most likely a result of wood movement due to humidity changes in the environment. We recommend having a qualified guitar technician raise or lower the saddle before continuing.



Tuning

Tuning is the most important concept of playing a guitar. If the guitar is not in tune with itself, or the other instruments in an ensemble, the resulting music will not sound pleasing to the ear. Having a good understanding of tuning is essential to maximizing the full potential of any guitar.

Important issues to consider when tuning a guitar:

- Get into the habit of tuning the guitar every time it is picked up to be played.
- Always tune the strings “up.” The final tuned tension of each string should be reached while tightening the string, not loosening it. If the string is tensioned too far, loosen the tension and tune “up” again.
- The goal when tuning is to make the strings in tune with one another. Standard tuning is shown in **Figure 16**.

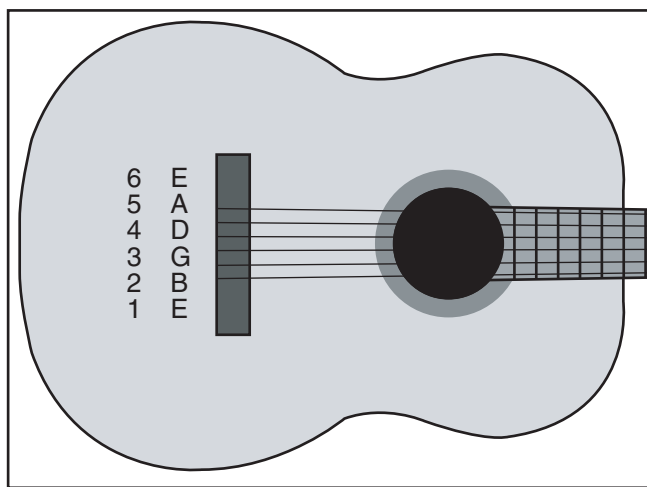


Figure 16. Winding the strings.

- The easiest way to tune a guitar is using an electronic tuner such as the Grizzly H3097 Chromatic Tuner shown on **page 17**. However, knowing how to tune a guitar by ear is an important part of being an accomplished guitar player.

To tune the guitar:

1. Play a known Low E pitch. A piano, a tuning fork, or an electronic computer file will work.
2. Play an open (non-fretted) 6th string. The goal is to match the open 6th string to the known Low E pitch.
3. Adjust the tuning peg until the pitch of the open 6th string sounds exactly like the known Low E source.
 - If the string is tuned too high, back the tension off and retune the string back up to match the Low E pitch. Now the other strings can be tuned to the 6th string.
4. Next, the 5th string needs to be tuned. The tone of the 5th string must be matched to the tone of the 6th string by playing the same note on each string, one after another. This is done by playing the 6th string while it is being pressed (fretted) at the 5th fret, and immediately after, playing the open 5th string.
5. Listen to the two tones. As the two notes are still resonating, adjust the tuning peg of the 5th string until the two notes have matching tones. Remember to tune “up.”
6. Perform the same tuning steps on the 4th and 3rd strings.
7. When tuning the 2nd string, the 3rd string should be fretted at the 4th fret instead of the 5th fret.
8. Tune the 1st string in the same manner as the 6th, 5th, 4th, and 3rd strings.



SECTION 6: REFERENCE INFO

General

This section contains aftermarket accessories and warranty/return information for the Model H3122.

If you need parts or help in assembling your machine, or if you need operational information, call the service department at (570) 546-9663. Trained service technicians will be glad to help you.

If you have any comments regarding this manual, please write to Grizzly at the address below:

Grizzly Industrial, Inc.
c/o Technical Documentation
P.O. Box 2069
Bellingham, WA 98227-2069

We recommend you keep a copy of our current catalog for complete information regarding Grizzly's warranty and return policy. If you need additional technical information relating to this machine, or if you need general assistance or replacement parts, please contact the Service Department at the location listed below.

Grizzly Industrial, Inc.
1203 Lycoming Mall Circle
Muncy, PA 17756
Phone: (570) 546-9663
Fax: (800) 438-5901
E-Mail: techsupport@grizzly.com
Web Site: <http://www.grizzly.com>.



Aftermarket Accessories



Figure 17. H3097 Chromatic Tuner.

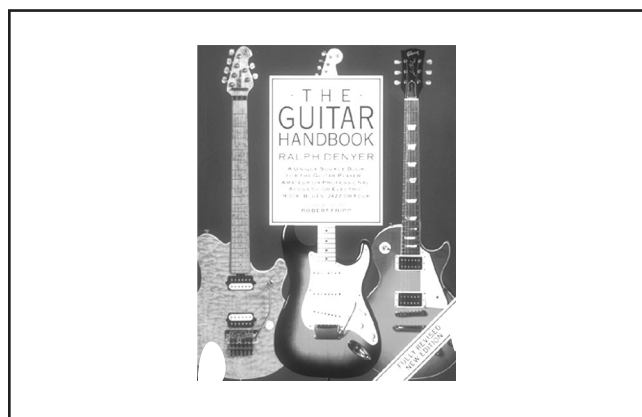


Figure 18. H4412 *The Guitar Handbook*.

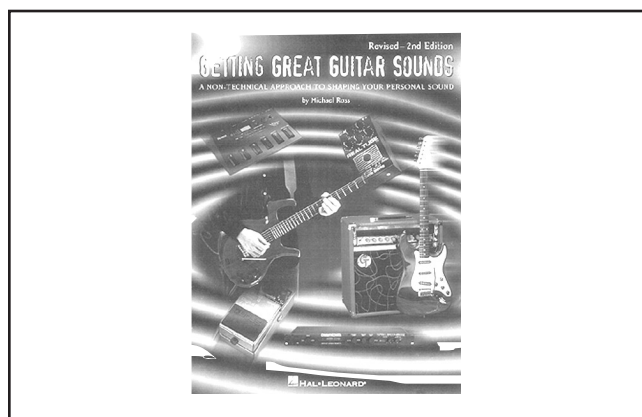


Figure 19. H4414 *Getting Great Guitar Sounds*.



Warranty & Returns

Grizzly Industrial, Inc. warrants every product it sells for a period of 1 year to the original purchaser from the date of purchase. This warranty does not apply to defects due directly or indirectly to misuse; abuse; negligence; accidents; repairs or alterations; assembly, finishing or modification of kits; or lack of maintenance. This is Grizzly's sole written warranty and any and all warranties that may be implied by law, including any merchantability or fitness, for any particular purpose, are hereby limited to the duration of this written warranty. We do not warrant or represent that the merchandise complies with the provisions of any law or acts unless the manufacturer so warrants. In no event shall Grizzly's liability under this warranty exceed the purchase price paid for the product and any legal actions brought against Grizzly shall be tried in the State of Washington, County of Whatcom.

We shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special, or consequential damages arising from the use of our products.

To take advantage of this warranty, contact us by mail or phone and give us all the details. We will then issue you a "Return Number," which must be clearly posted on the outside as well as the inside of the carton. We will not accept any item back without this number. Proof of purchase must accompany the merchandise.

The manufacturers reserve the right to change specifications at any time because they constantly strive to achieve better quality equipment. We make every effort to ensure that our products meet high quality and durability standards and we hope you never need to use this warranty.

Please feel free to write or call us if you have any questions about the machine or the manual.

Thank you again for your business and continued support. We hope to serve you again soon.

WARRANTY CARD

Name _____
Street _____
City _____ State _____ Zip _____
Phone Number _____ E-Mail _____ FAX _____
MODEL # _____ Order # _____

The following information is given on a voluntary basis. It will be used for marketing purposes to help us develop better products and services. Of course, all information is strictly confidential.

1. How did you learn about us? _____ Other _____
 Advertisement Friend
 Catalog Card Deck
 World Wide Web
 Other _____
2. Which of the following magazines do you subscribe to.
 American Woodworker Practical Homeowner
 Cabinetmaker Shop Notes
 Family Handyman Today's Homeowner
 Fine Homebuilding WOOD
 Fine Woodworking Wooden Boat
 Home Handyman Woodshop News
 Journal of Light Construction Woodsmith
 Old House Journal Woodwork
 Popular Mechanics Woodworker
 Popular Science Woodworker's Journal
 Popular Woodworking Workbench
 Other _____
3. Which of the following woodworking/remodeling shows do you watch?
 Backyard America The New Yankee Workshop
 Home Time This Old House
 The American Woodworker Woodwright's Shop
 Other _____
4. What is your annual household income?
 \$20,000-\$29,999 \$60,000-\$69,999
 \$30,000-\$39,999 \$70,000-\$79,999
 \$40,000-\$49,999 \$80,000-\$89,999
 \$50,000-\$59,999 \$90,000 +
5. What is your age group?
 20-29 50-59
 30-39 60-69
 40-49 70 +
6. How long have you been a woodworker?
 0 - 2 Years 8 - 20 Years
 2 - 8 Years 20+ Years
7. How would you rank your woodworking skills?
 Simple Advanced
 Intermediate Master Craftsman
8. What stationary woodworking tools do you own? Check all that apply.
 Air Compressor Panel Saw
 Bandsaw Planer
 Drill Press Power Feeder
 Drum Sander Radial Arm Saw
 Dust Collector Shaper
 Horizontal Boring Machine Spindle Sander
 Jointer Table Saw
 Lathe Vacuum Veneer Press
 Mortiser Wide Belt Sander
9. How many of your woodworking machines are Grizzly? _____
10. Which benchtop tools do you own? Check all that apply.
 1" x 42" Belt Sander 6" - 8" Grinder
 5" - 8" Drill Press Mini Lathe
 8" Table Saw 10" - 12" Thickness Planer
 8" - 10" Bandsaw Scroll Saw
 Disc/Belt Sander Spindle/Belt Sander
 Mini Jointer
 Other _____
11. How many of the machines checked above are Grizzly? _____
12. Which portable/hand held power tools do you own? Check all that apply.
 Belt Sander Orbital Sander
 Biscuit Joiner Palm Sander
 Circular Saw Portable Planer
 Detail Sander Saber Saw
 Drill/Driver Reciprocating Saw
 Miter Saw Router
 Other _____
13. What machines/supplies would you like Grizzly Industrial to carry?

14. What new accessories would you like Grizzly Industrial to carry?

15. What other companies do you purchase your tools and supplies from?

16. Do you think your purchase represents good value?
 Yes No
17. Would you recommend Grizzly Industrial to a friend?
 Yes No
18. Would you allow us to use your name as a reference for Grizzly customers in your area? **Note: We never use names more than three times.**
 Yes No
19. Comments: _____

CUT ALONG DOTTED LINE

FOLD ALONG DOTTED LINE



Place
Stamp
Here



GRIZZLY INDUSTRIAL, INC.
P.O. BOX 2069
BELLINGHAM, WA 98227-2069



FOLD ALONG DOTTED LINE

Send a Grizzly Catalog to a friend:

Name _____
Street _____
City _____ State _____ Zip _____

TAPE ALONG EDGES--PLEASE DO NOT STAPLE

grizzly.com

TOOL WEBSITE

Buy Direct and Save with Grizzly® – Trusted, Proven and a Great Value!

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